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CORRESPONDENCE.

EDITOR ANALYST:—

Since you decline to publish my review of Prof. Newcomb's article on Limits on the ground that it is a repetition of arguments already gone over and hence may not be interesting to your readers; I desire to say simply, in regard to the criticism upon myself, that Prof. Newcomb's objection to my definition of a limit is not valid, since, according to accepted definitions including his own, *it is true* that any value of the sine less than unity is the limit of a series of sines subjected to such a law as that there shall be an *indefinite* approach to that value. Also that he has not shown why the syllogism, to which reference was made, is not as applicable to a divided time, as to a divided debt, or to a divided space. It is not, by any means, necessary to assume a case of uniform motion in order to illustrate the *reductio ad absurdum* to which it leads.

DE VOLSON WOOD.

Hoboken, N. J., Aug. 1, 1882.

SOLUTION OF PROB. 397 BY PROF. J. M. RICE.—Problem 397 will be found in the new edition of Thomson and Tait's Natural Philosophy, page 349. The following is an algebraic solution.

Putting $y' = 0$ we have $x'^2 = x^2 + y^2$, and from the first equation,

$$\varphi(x^2)\,\varphi(y^2) = \varphi(x^2+y^2)\,\varphi(0) \qquad (a)$$

Again, putting $y^2 = x^2$, $y^2 = 2x^2$, etc., and denoting $\varphi(0)$ by c, we have

$$[\varphi(x^2)]^2 = c.\varphi(2x^2), \qquad (b)$$

and $$[\varphi(x^2)]_3 = \varphi(3x^2)c^2, \text{ etc.,}$$

finally $$[\varphi(x^2)]^n = \varphi(nx^2)c^{n-1}.$$

We now substitute z^2 for nx^2 and elminate n, whence

$$[\varphi(x^2)]^{1\div x^2} = [\varphi(z^2)^{1\div z^2}C]^{1\div x^2-1\div z^2},$$

or $$\left[\frac{\varphi(x^2)}{c}\right]^{1\div x^2} = \left[\frac{\varphi(z^2)}{c}\right]^{1\div z^2} = k \text{ (a constant)};$$

$$\therefore \varphi(x^2) = ck^{x^2} = ce^{x^2\div h^2}.$$

In Professor Hall's solution of this problem on p. 120, it is assumed that the partial derivatives $df\div du$ and $df\div dv$ are equal [f denoting $f(u, v)$]. I do not see that this assumption is admissible except when φ denotes an exponential function.